Great Lakes Navigation

The Great Lakes Navigation System

GREAT LAKES & OHIO RIVER DIVISION

Great Lakes Navigation

Agenda

GREAT LAKES & OHIO RIVER DIVISION

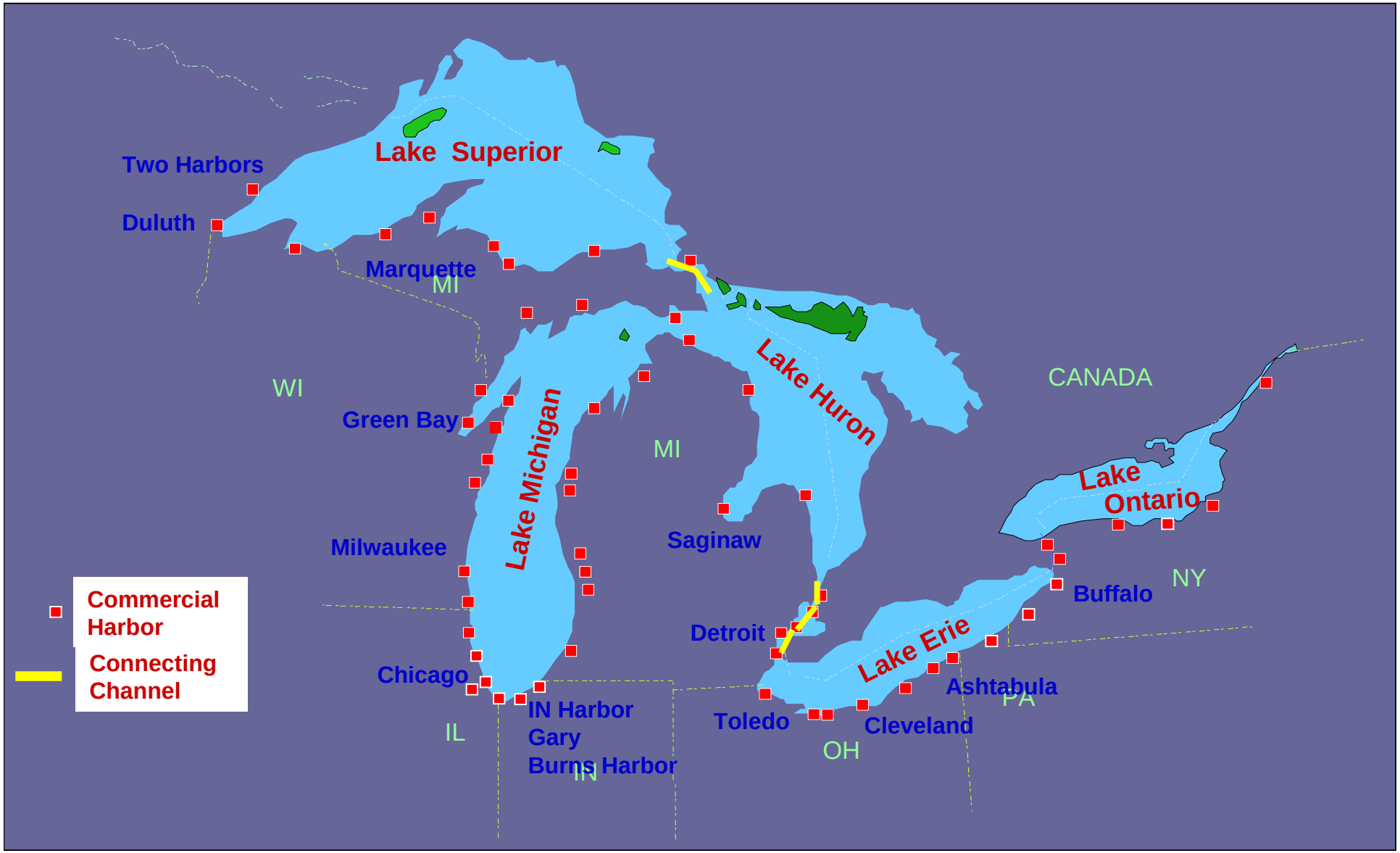
1. Background and Current System Conditions
2. Value of the Great Lakes Navigation System to the American Economy
3. The Great Lakes Navigation Team
4. Great Lakes Navigation System Investments
   - ✓ Annual Dredging
   - ✓ Dredged Material Disposal Capacity
   - ✓ Connecting Channels
   - ✓ Breakwaters
5. Summary – The Great Lakes Navigation System
6. Questions

Great Lakes Navigation

Great Lakes Navigation System

Background and Current Condition

GREAT LAKES & OHIO RIVER DIVISION



Great Lakes Navigation System

Background and Current Condition

✓ A non-linear navigation system with 63 large and smaller federal commercial harbors **interdependent** on each other for the efficiency and the health of the Great Lakes Navigation System (GLNS)

✓ **25 of the Nation's top 100 harbors** (by tonnage) linked in trade with each other, the system's smaller harbors, Canada, and the rest of the world

✓ Unlike other costal ports, Great Lakes Ports do not compete against each other for tonnage. Rather they "compete" against other modes of transportation or against **lost economic activity**

Great Lakes Navigation System

Background and Current Condition

Current Condition

✓ Vital component of America's transportation system

✓ Increased tonnage and usage projected

✓ Federal Channels and harbors are not dredged to full project width and depth *(17-18 million CY backlog)*

✓ Long term sustainability requires risk based investments in:

- Dredged Material Storage Capacity
- Lock Re-capitalization
- Breakwaters Rehabilitation

Great Lakes Navigation System

Background and Current Condition

Great Lakes Navigation System Interconnectivity

✓ Most Great Lakes commerce (by tonnage) is US to US port

✓ Loss of outbound or inbound tonnage results in equal loss at another American Great Lakes Harbor

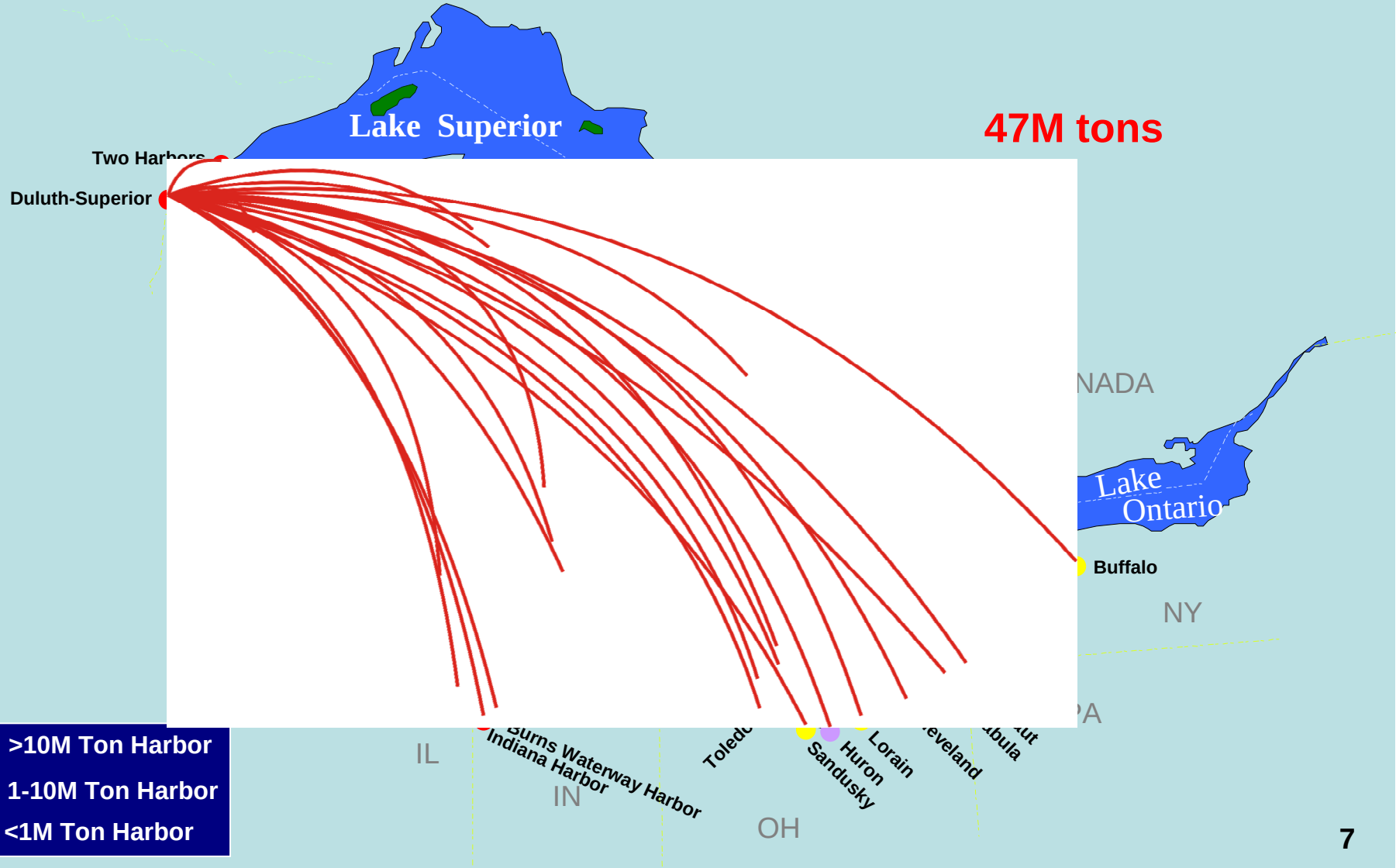
✓ Large and Small ports (by tonnage) are vital to the Great Lakes Navigation System's Health

Erie, PA 1.1 Million tons/ year

Holland, MI 650,000 tons/ year

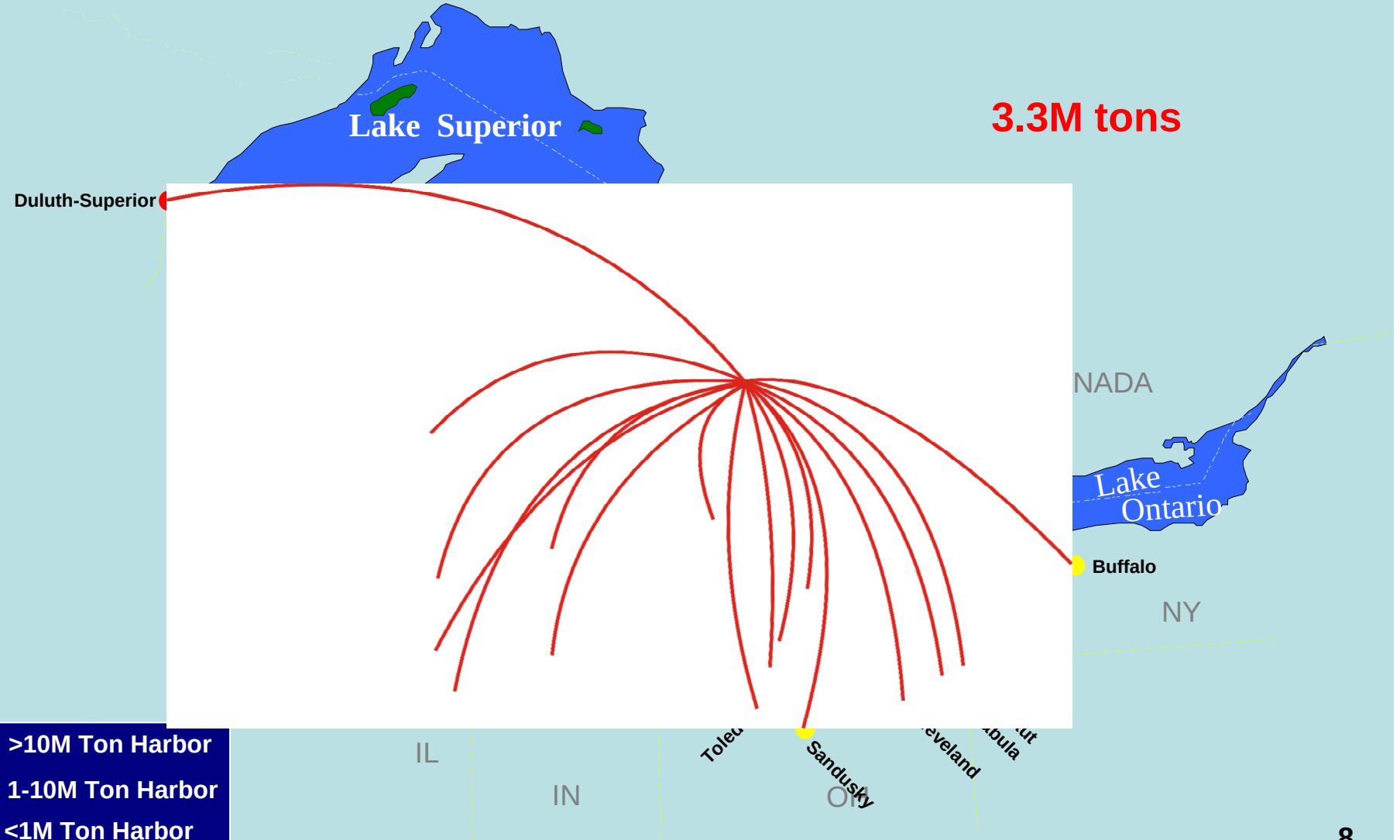
Great Lakes Navigation

Federal Harbors that ship to/ receive from Duluth-Superior Harbor



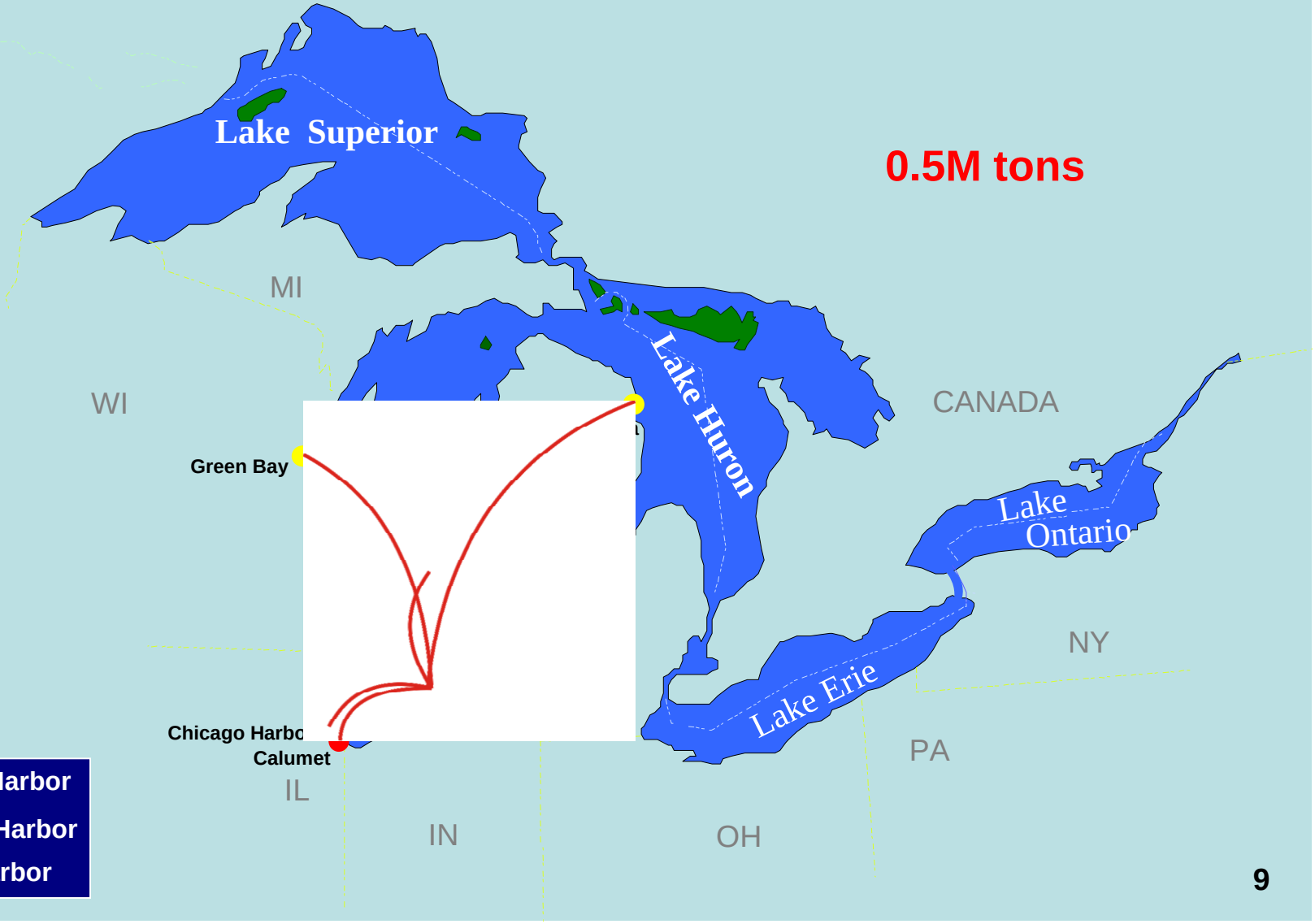
Great Lakes Navigation

Federal Harbors that ship to/ receive from Alpena Harbor



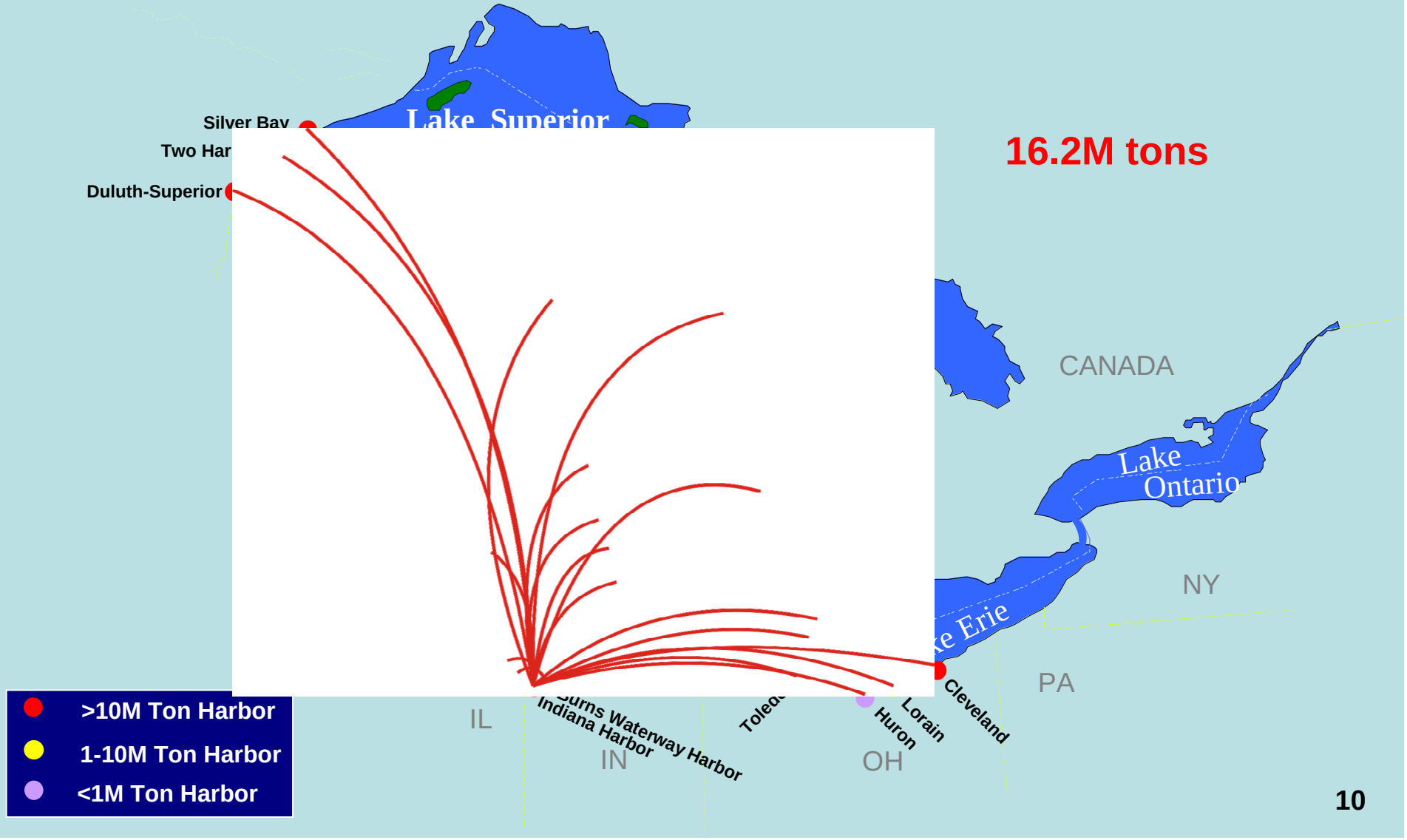
Great Lakes Navigation

Federal Harbors that ship to/ receive from St. Joseph Harbor



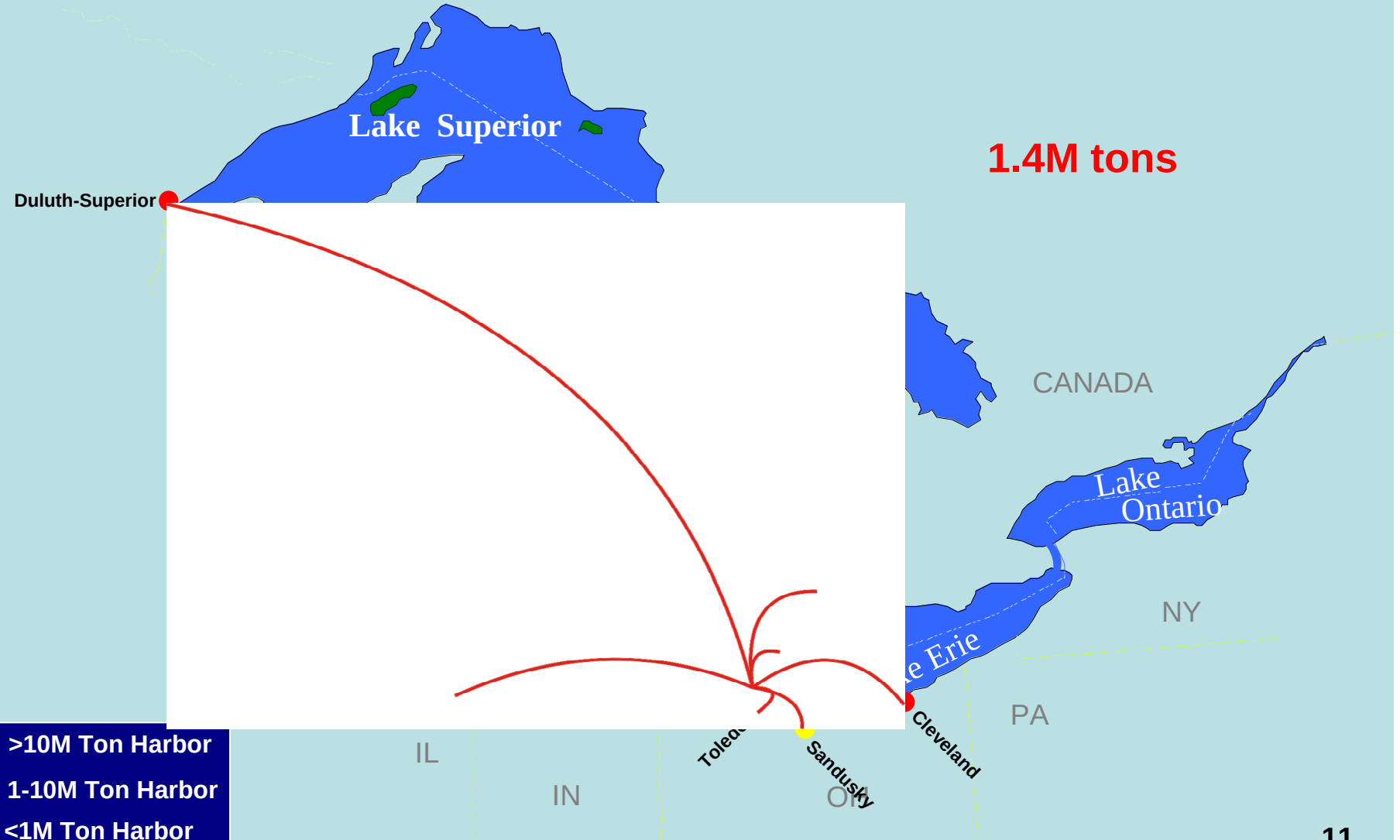
Great Lakes Navigation

Federal Harbors that ship to/ receive from Indiana Harbor



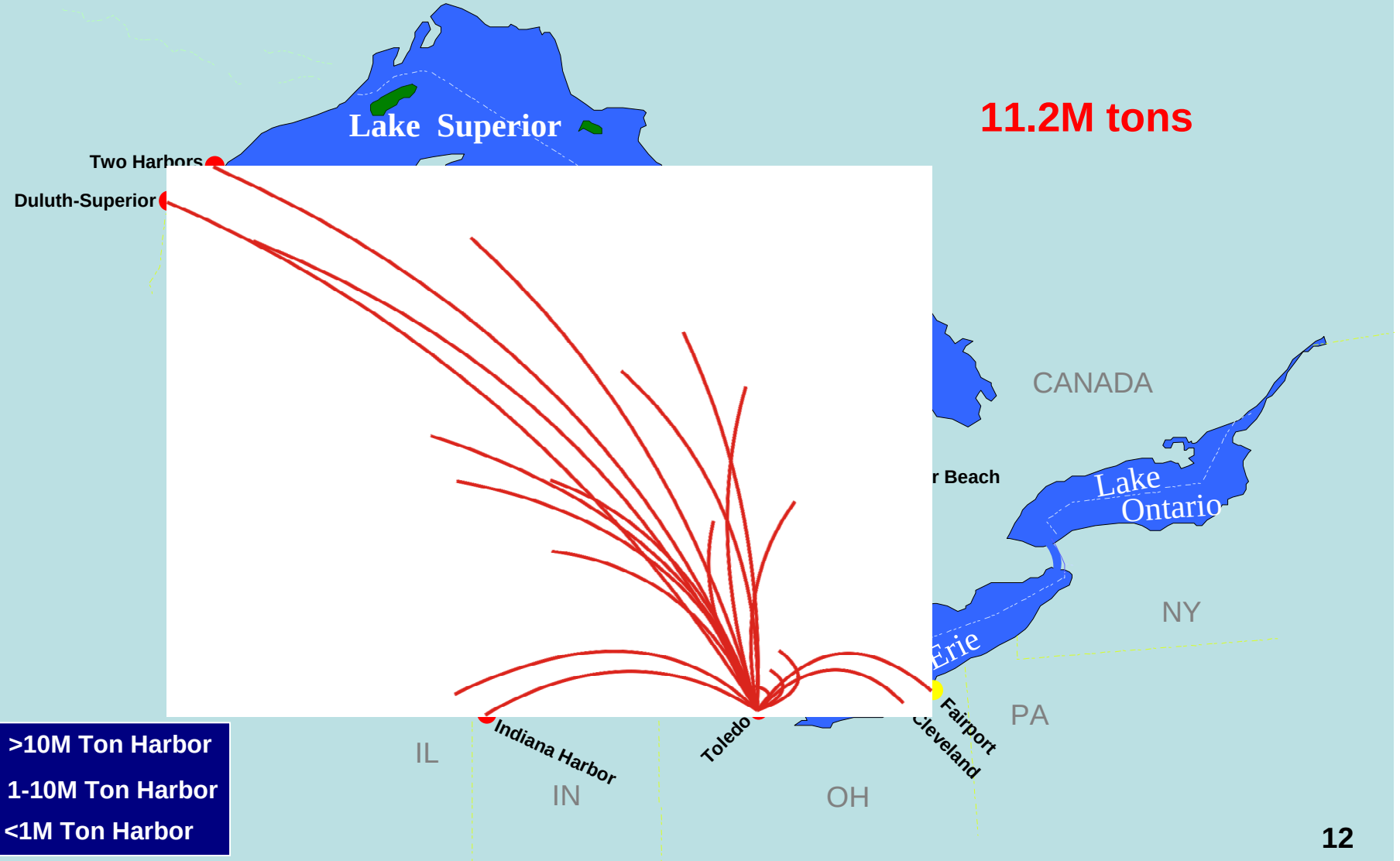
Great Lakes Navigation

Federal Harbors that ship to/ receive from Monroe Harbor



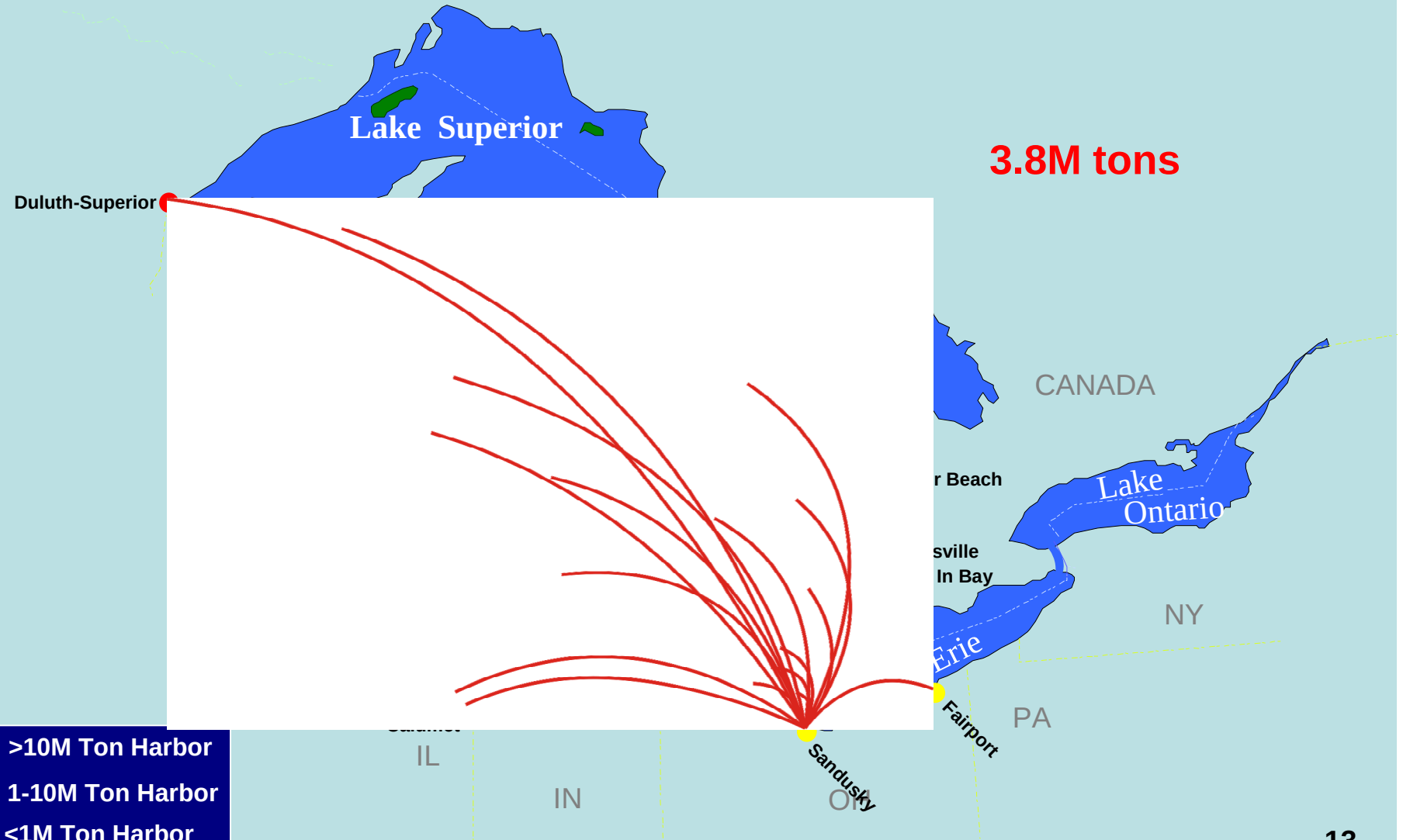
Great Lakes Navigation

Federal Harbors that ship to/ receive from Toledo Harbor



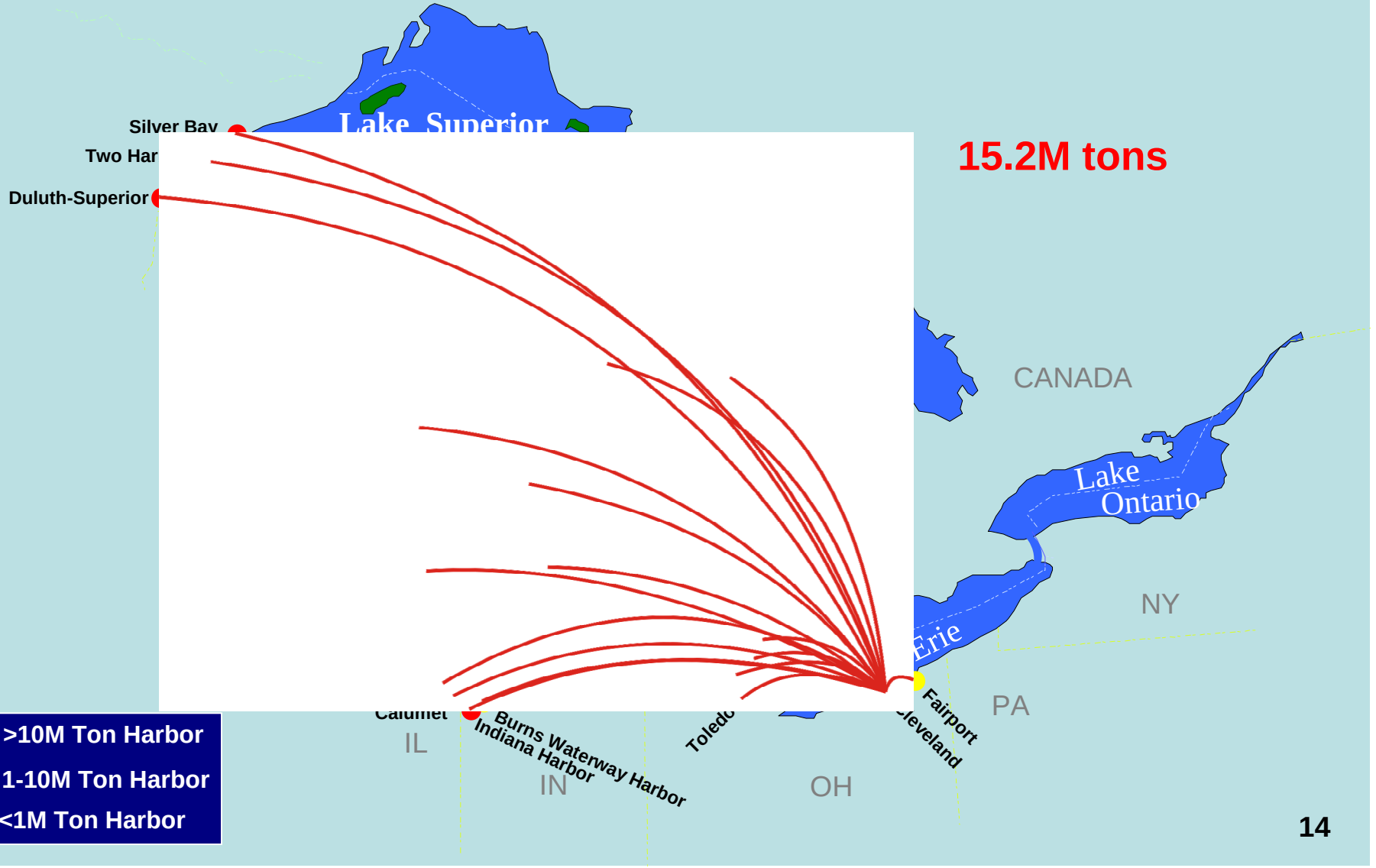
Great Lakes Navigation

Federal Harbors that ship to/ receive from Sandusky Harbor



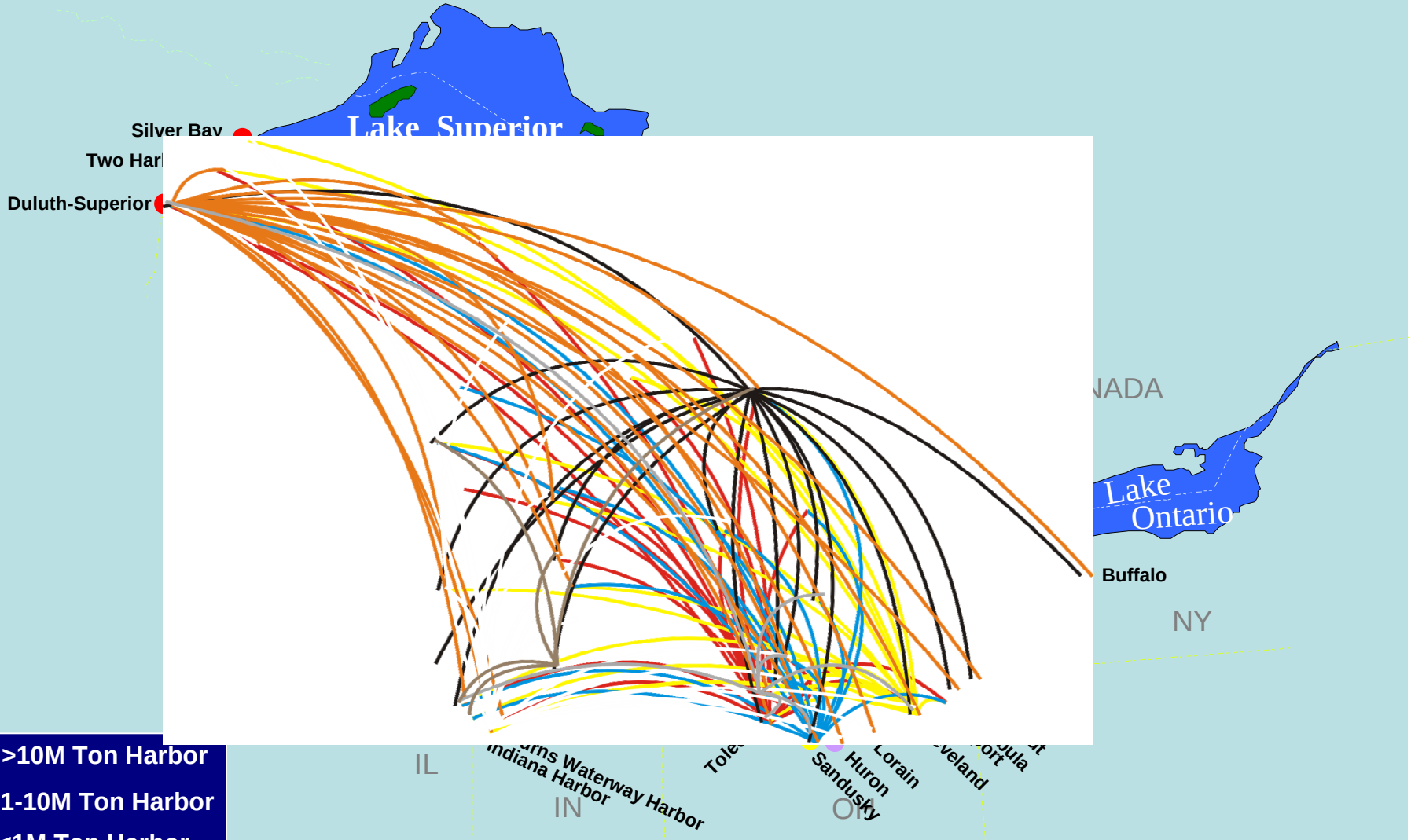
Great Lakes Navigation

Federal Harbors that ship to/ receive from Cleveland Harbor



Great Lakes Navigation

System Interconnectivity for 8 Harbors



Great Lakes Navigation

Value of the Great Lakes Navigation System to the American Economy

GREAT LAKES & OHIO RIVER DIVISION

The Great Lakes Navigation System's Transportation Rate Savings → **$3.2 Billion/year**

More competitive American steel, lower cost energy, and lower cost concrete for construction and highways

---

Transportation Rate Savings = Saving over moving goods by the next least costly means of transportation - Rail or Truck (TRS = Total Alternate Mode Cost – Total Water Cost)

Transposition Cost Saving = additional cost incurred by shippers due to shoaling (light loading)

Great Lakes Navigation

Value of the Great Lakes Navigation System to the American Economy

GREAT LAKES & OHIO RIVER DIVISION

Aggregates, Saginaw River, MI

Taconite, US Steel, Gary IN

Coal unloading, Toledo, OH

Windmill Parts, St Marys River, MI

Great Lakes Navigation

Value of the Great Lakes Navigation System to the American Economy

GREAT LAKES & OHIO RIVER DIVISION

- ✓ Annually 180 million tons are transported on the Great Lakes
- ✓ 44,000 Jobs are directly related to maritime transport (ports, shippers, longshoremen, etc.)
- ✓ 138,000 Steel Industry Jobs are dependent on the GLNS
- ✓ 54,400 Mining Jobs are dependent on the GLNS

Iron Ore/Steel products (68.2 M tons)
Coal (41.4 M tons)
Petro. Products & Crude (45.9 M tons)
Aggregates (50.3 M tons)
Other Ores (8.9 M tons)
Grain (4.9 M tons)
Chemicals (4.0 M tons)
Other Commodities (12 M tons)

Drives

The Nation's Primary Steel Production

The Region's Electrical Power

Construction

Regional Manufacturing

Farming

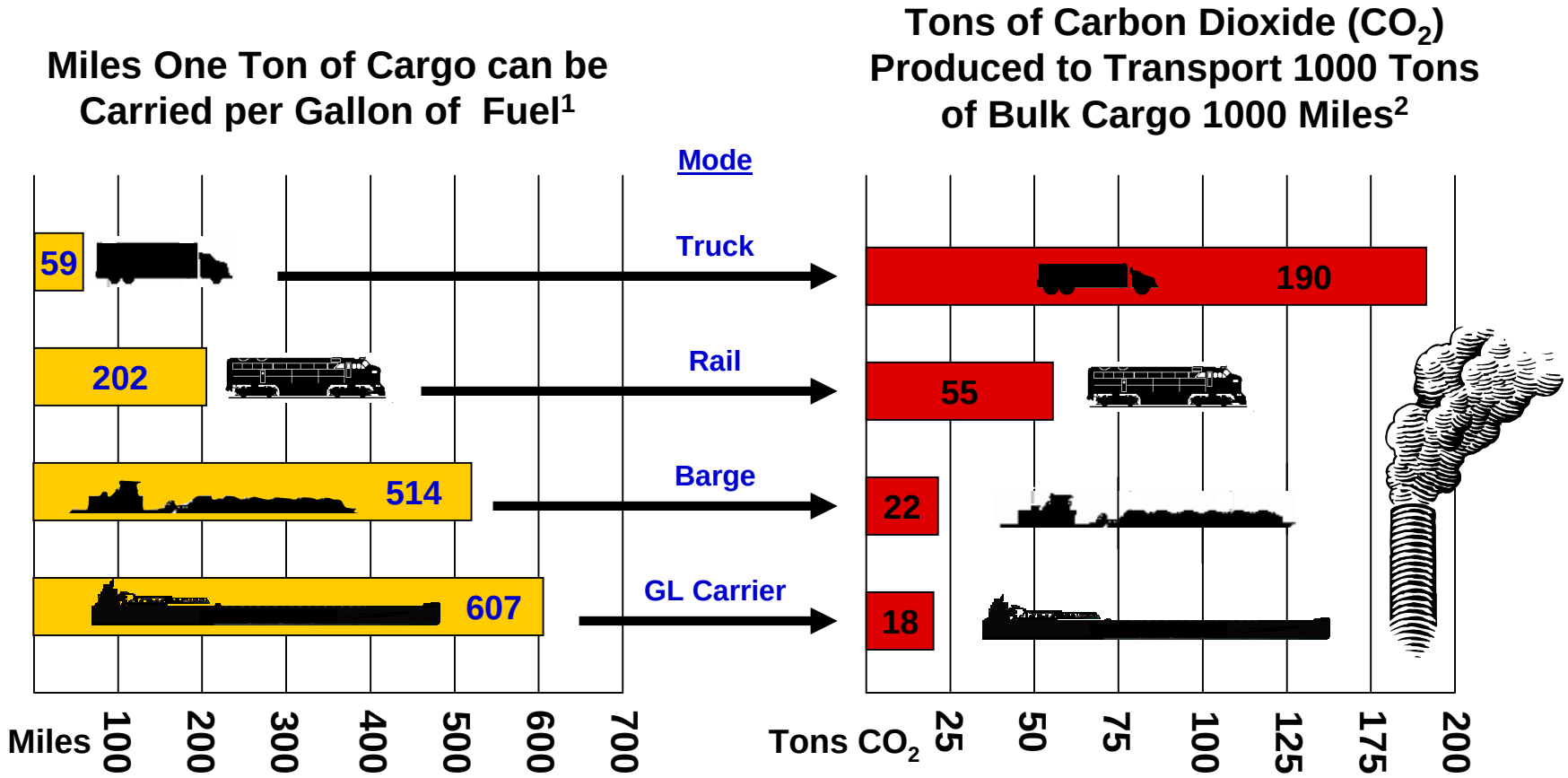
Coal and Ore Mining

Great Lakes Navigation

Value of the Great Lakes Navigation System to the American Economy

GREAT LAKES & OHIO RIVER DIVISION

Fuel Efficiency & Environmental Impact



1. Source: USDOT Maritime Administration and Minnesota Department of Transportation
2. Assumes US DOE Fuel and Energy Emission Coefficient of 22.38 lbs of CO_2 per gallon (No.1,2,4 Fuel Oils and Diesel) for GL Carrier

Great Lakes Navigation

Light Loading
The Loss of One Foot of Draft

GREAT LAKES & OHIO RIVER DIVISION

Major Great Lakes Vessel Class	Vessel Length (feet)	Per-Trip Capacity (tons)	Lost Capacity Per Foot of Draft (tons)
	1000	69,664	3200
	806	34,720	1750
	767	28,336	1525
	730	27,558	1380
	635	22,064	1280
	501	13,776	850

12” of lost draft means it takes 22 carriers to haul what 21 fully loaded carriers could haul. The extra trip costs approximately $150,000.

The Great Lakes Navigation Team
(1 of 2)

Purpose: To operate and maintain the Great Lakes Navigation System to meet current and future needs using a system-wide approach of reducing risk and providing optimal reliability

Objectives:

✓ Make investment decisions using asset management and risk-based budgeting principles

✓ Recognize and communicate the importance of Great Lakes navigation interconnectivity on the overall viability and long-term health of the system. Loss or diminishment of any single project in the long-term has the potential to significantly affect the viability of the system as a whole.

✓ Balance investment decisions between short-term requirements (such as dredging) with long-term sustainability needs (such as disposal capacity needs)

✓ Integrate stakeholders into the GL Nav team to encourage two-way coordination and communication; obtaining stakeholder input on critical system needs and consequences is an important part of helping the Corps make the best investment decisions

The Great Lakes Navigation Team
(2 of 2)

Composition:

✓ The three USACE Great Lakes Districts -- Buffalo, Chicago, and Detroit -- operate under a unified, regional approach to management of the Great Lakes navigation system.

✓ Detroit is the Lead District; Mike O'Bryan is the Great Lakes Navigation Business Line Manager

✓ With the Detroit District as lead, specific strengths and expertise of each district are leveraged to form multidisciplinary regional teams. Assets and activities are managed jointly in cases where it achieves regional efficiency. Floating plant and survey resources are two areas that have transitioned to regional management.

Great Lakes Navigation

Great Lakes Navigation System Investments

GREAT LAKES & OHIO RIVER DIVISION

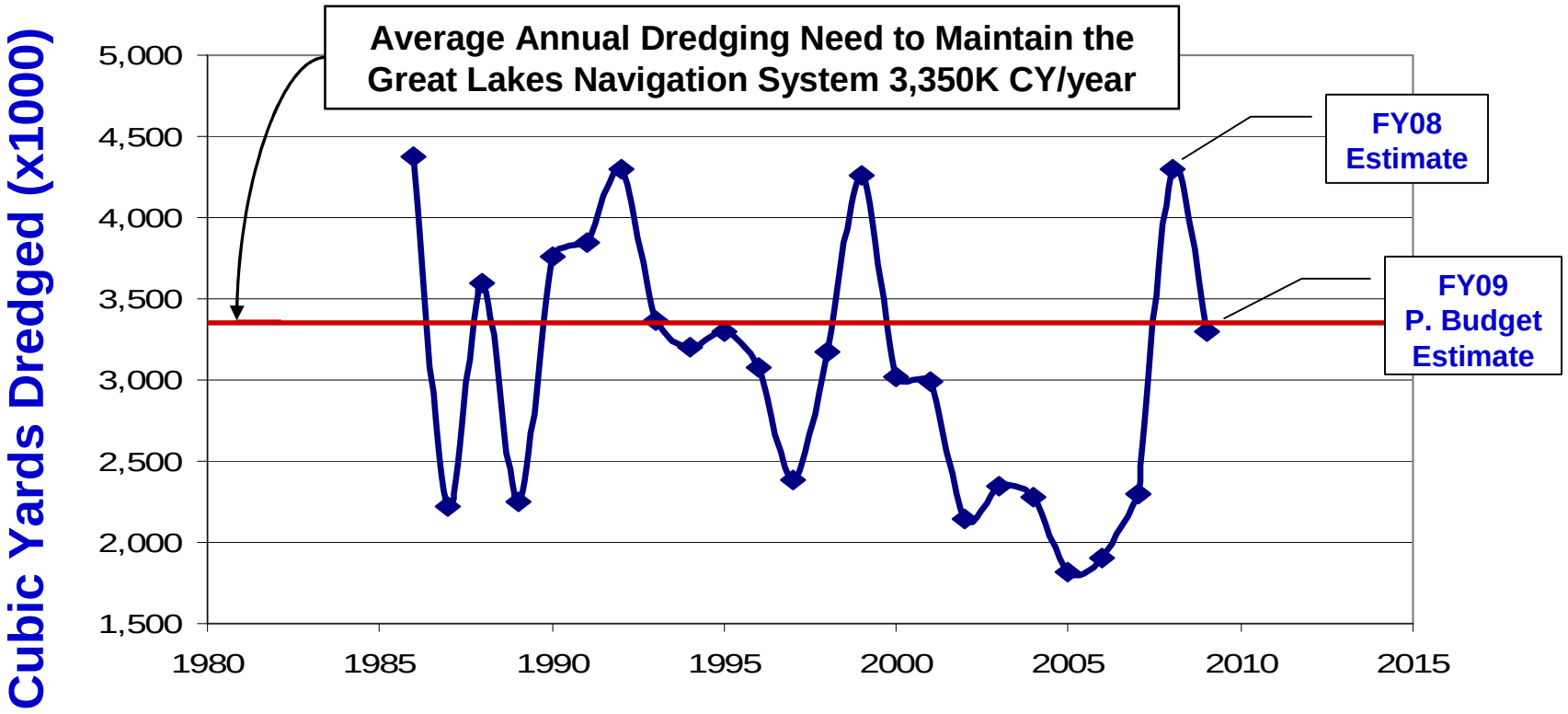
- ✓ Dredging
- ✓ Dredged Material Disposal
- ✓ Connecting Channels
- ✓ Breakwaters

Great Lakes Navigation

Annual Dredging

Great Lakes Navigation System Investments

Annual Great Lakes Dredging 1986-2009



Great Lakes Navigation

Dredged Material Disposal Capacity

Great Lakes Navigation System Investments

GREAT LAKES & OHIO RIVER DIVISION

Great Lakes Navigation

Connecting Channels

Great Lakes Navigation System Investments

GREAT LAKES & OHIO RIVER DIVISION

Locks

✓ Operate locks at Sault Ste. Marie, Chicago Lock, and Black Rock Lock

✓ Routine O&M plus needed repairs, replacement, and upgrades of critical components

Channels

✓ Maintain clear channels for navigation in the St. Marys River, St. Clair River, Lake St. Clair, and Detroit River

✓ Strike removal (sounding for, locating, and removing boulders and other obstructions from the Federal channel) is a continuous activity.

✓The Neebish Rock Cut (St Marys River) requires wall stabilization. This is a critical reach of the St. Marys River between the Soo Locks and Lake Huron. Increased rock slippage or a major failure of a wall section would have a severe impact on the GLNS.

Great Lakes Navigation

Connecting Channels

Great Lakes Navigation System Investments

GREAT LAKES & OHIO RIVER DIVISION

Soo Locks Recapitalization Plan

Recapitalizes and modernize the locks and supporting infrastructure at Sault Ste. Marie from FY08-FY13 in order to provide reliable infrastructure through the year 2035 and beyond.

- ✓ Essential to avoid catastrophic shut down of Great Lakes Navigation System – buys down risk of long-term closure
- ✓ Poe Lock main focus (hydraulics, stoplogs, gates)
- ✓ Supporting infrastructure (steam/air lines, communication system)
- ✓ Rock Cut stabilization – Saint Marys River
- ✓ Sabin & Davis Locks - Decommission

Great Lakes Navigation

Breakwaters

Great Lakes Navigation System Investments

Duluth, MN

- ✓ **104 miles of breakwaters within the Great Lakes Nav. System**
- ✓ **80% are over 50 years old, 50% are 90+ years old**
- ✓ **Many structures now provide storm damage reduction to infrastructure that developed behind the breakwater**

- ✓ **50+ year design life, much of the system requires significant repairs**
- ✓ **Underinvested in the last 10+ years**
- ✓ **Cost $15-20M or more per mile to repair**

Cleveland, OH

Great Lakes Navigation

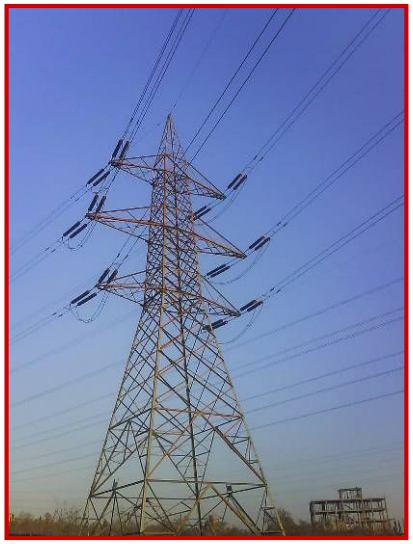
Summary

Great Lakes Navigation System

GREAT LAKES & OHIO RIVER DIVISION

The Great Lakes Navigation System's Transporting Rates Savings → **$3.2 Billion/year**

- ✓ More competitive American steel
- ✓ Lower cost energy
- ✓ Lower cost concrete (construction)
- ✓ More competitive Grain for Export
- ✓ Less fuel consumption and greenhouse gas emissions
- ✓ Less congested highways/rails



Great Lakes Navigation

Questions

USACE Employees – Concrete Maintenance at the Soo Locks 2007